

NOTICE

All drawings located at the end of the document.

Characterization Data Summary
IHSS Group 000-1

DOCUMENT CLASSIFICATION
REVIEW V/A VER PER
CLASSIFICATION OFFICE



December 2002

ADMIN RECORD
IA-A-001206

Y37

Table of Contents

1 0	Introduction	1
2 0	Site Characterization	1
3 0	Deviations From Planned Sampling Specifications	28
4 0	Data Quality Assessment	29
5 0	References	33

List of Figures

Figure 1	IHSS Group 000-1 Location Map	2
Figure 2	Soil Results Greater Than Background Mean Plus Two Standard Deviations or Reporting Limits	3

List of Tables

Table 1	IHSS Group 000-1 Description	1
Table 2	IHSS Group 000-1 Characterization Sampling Specifications	4
Table 3	IHSS Group 000-1 Soil Results Greater than Background Mean Plus Two Standard Deviations or Reporting Limits	7
Table 4	IHSS Group 000-1 Summary of Analytical Results	24
Table 5	IHSS Group 000-1 Deviations from Planned Sampling Specifications	28
Table 6	IHSS Group 000-1 Summary of Validated Records	32

Enclosure

Compact Disc - IHSS Group 000-1 Raw Data

ACRONYMS

AL	action level
AR	Administrative Record
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U S Department of Energy
DQA	Data Quality Assessment
DQO	Data Quality Objective
EPA	U S Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Procedure
HPGe	high-purity germanium detector
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company L L C
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
mg/kg	milligram per kilogram
N/A	not applicable
ND	not detected
PAC	Potential Area of Concern
PARCCS	precision, accuracy, representativeness, completeness, comparability, and sensitivity
pCi/g	picocurie per gram
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RIN	report identification number
RL	reporting limit
SAP	Sampling and Analysis Plan
SD	standard deviation
SEP	Solar Evaporation Ponds
SOR	sum of ratio
SVOC	semi-volatile organic compound
µg/kg	microgram per kilogram
VOC	volatile organic compound
V&V	verification and validation

3

1.0 INTRODUCTION

This data summary report summarizes characterization activities conducted at Individual Hazardous Substance Site (IHSS) Group 000-1 at the Rocky Flats Environmental Technology Site (RFETS) in Golden, Colorado. Characterization activities were planned and executed in accordance with the Industrial Area Sampling and Analysis Plan (IASAP) (DOE 2001) and IASAP Addendum #IA-03-02 (DOE 2002a).

The IHSSs included in this report are listed in Table 1 and shown on Figure 1.

Table 1
IHSS Group 000-1 Description

IHSS Group	IHSS/PAC/UBC Site
000-1	IHSS 000-101 – Solar Evaporation Ponds (SEP) (area north of IHSS 175)
	IHSS 900-165 – Triangle Area
	IHSS 900-176 – S&W Contractor Yard

2.0 SITE CHARACTERIZATION

IHSS Group 000-1 information consists of historical knowledge (DOE 1992-2001) and 77 additional sampling locations with specifications as described in IASAP Addendum #IA-03-02 (DOE 2002a). The sampling specifications for the characterization samples collected are listed in Table 2. The location of these samples and analytical results greater than background mean plus two standard deviations or reporting limits are presented in Figure 2 and Table 3. A summary of the analytical results is presented in Table 4. Deviations from planned sampling specifications are presented in Table 5. A summary of validated analytical records is presented in Table 6. The raw data are enclosed on a compact disc.

Analytical results indicate that benzo(a)pyrene is slightly above the RFCA Tier II action level (AL) in one location in IHSS 900-165 and arsenic is above the RFCA Tier II AL in all three IHSSs, but less than the laboratory reporting limit (RL). All other contaminant concentrations are less than RFCA Tier II ALs.

35 mm DRAWING

Table 2
IHSS Group 000-1 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
000 1	IHSS 101 Solar Evaporation Ponds (SEP)	CM47-A003	2085314 67	750929 01	Surface Soil	0-0 5'	Metals	6200	6010
		CM47-A004	2085314 67	750785 06	Surface Soil	0-0 5'	Metals	6200	6010
		CM48-A008	2085305 15	751001 59	Surface Soil	0-0 5'	Metals	6200	6010
		CN47-A000	2085374 16	750899 27	Surface Soil	0-0 5'	Metals	6200	6010
		CN47-A001	2085375 35	750825 51	Surface Soil	0-0 5'	Metals	6200	6010
		CN48-A000	2085369 40	750968 27	Surface Soil	0-0 5'	Metals	6200	6010
		CO46-A000	2085633 51	750622 07	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CO46-A000	2085633 51	750622 07	Surface Soil	0-0 5'	Metals	6200	6010
	IHSS 900 165 Triangle Area	CO46-A000	2085633 51	750622 07	Surface Soil	0-0 5'	SVOCs	N/A	8270
		CO46-A001	2085695 38	750660 14	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CO46-A001	2085695 38	750660 14	Surface Soil	0-0 5'	Metals	6200	6010
		CO46-A001	2085695 38	750660 14	Surface Soil	0-0 5'	SVOCs	N/A	8270
		CP46-A000	2085821 49	750662 52	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CP46-A000	2085821 49	750662 52	Surface Soil	0-0 5'	Metals	6200	6010
		CP46 A000	2085821 49	750662 52	Surface Soil	0-0 5'	SVOCs	N/A	8270
		CP46 A001	2085826 25	750589 95	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CP46-A001	2085826 25	750589 95	Surface Soil	0-0 5'	Metals	6200	6010
		CP46-A001	2085826 25	750589 95	Surface Soil	0-0 5'	SVOCs	N/A	8270
		CQ45 A000	2085951 17	750524 51	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CQ45-A000	2085951 17	750524 51	Surface Soil	0-0 5'	Metals	6200	6010
		CQ45 A000	2085951 17	750524 51	Surface Soil	0-0 5'	SVOCs	N/A	8270
		CP46-A002	2085884 54	750630 40	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CP46 A002	2085884 54	750630 40	Surface Soil	0-0 5'	Metals	6200	6010
		CP46 A002	2085884 54	750630 40	Surface Soil	0-0 5'	SVOCs	N/A	8270
		CP46-A003	2085879 78	750701 78	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CP46-A003	2085879 78	750701 78	Surface Soil	0-0 5'	Metals	6200	6010
		CP46 A003	2085879 78	750701 78	Surface Soil	0-0 5'	SVOCs	N/A	8270

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
		CQ46-A000	2085945 22	750742 23	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CQ46-A000	2085945 22	750742 23	Surface Soil	0-0.5'	Metals	6200	6010
		CQ46-A000	2085945 22	750742 23	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CQ46-A001	2085940 46	750668 47	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CQ46-A001	2085940 46	750668 47	Surface Soil	0-0.5'	Metals	6200	6010
		CQ46-A001	2085940 46	750668 47	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CQ46-A002	2085949 98	750598 27	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CQ46-A002	2085949 98	750598 27	Surface Soil	0-0.5'	Metals	6200	6010
		CQ46-A002	2085949 98	750598 27	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CQ46-A003	2086011 84	750563 77	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CQ46-A003	2086011 84	750563 77	Surface Soil	0-0.5'	Metals	6200	6010
		CQ46-A003	2086011 84	750563 77	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CQ46-A004	2086008 27	750619 91	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CQ46-A004	2086008 27	750639 91	Surface Soil	0-0.5'	Metals	6200	6010
		CQ46-A004	2086008 27	750639 91	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CQ46-A005	2086003 51	750708 92	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CQ46-A005	2086003 51	750708 92	Surface Soil	0-0.5'	Metals	6200	6010
		CQ46-A005	2086003 51	750708 92	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CQ46-A006	2086073 71	750599 46	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CQ46-A006	2086073 71	750599 46	Surface Soil	0-0.5'	Metals	6200	6010
		CQ46-A006	2086073 71	750599 46	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CM46-A001	2085253 99	750748 18	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CM46-A001	2085253 99	750748 18	Surface Soil	0-0.5'	Metals	6200	6010
		CM46-A001	2085253 99	750748 18	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CM46-A001	2085253 99	750748 18	Surface Soil	0-0.5'	PCBs	N/A	8082
		CM46-A002	2085319 43	750713 68	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec
		CM46-A002	2085319 43	750713 68	Surface Soil	0-0.5'	Metals	6200	6010
		CM46-A002	2085319 43	750713 68	Surface Soil	0-0.5'	SVOCs	N/A	8270
		CM46-A002	2085319 43	750713 68	Surface Soil	0-0.5'	PCBs	N/A	8082

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Laboratory Method	Offsite Laboratory Method
	IHSS 900-176 S&W Contractor Yard	CM45-A001	2085330 14	750497 15	Surface Soil	0 0 5	Radionuclides	HPGe	Alpha Spec
		CM45 A001	2085330 14	750497 15	Surface Soil	0-0 5'	Metals	6200	6010
		CM45-A001	2085330 14	750497 15	Surface Soil	0-0 5	SVOCs	N/A	8270
		CN44 A000	2085457 47	750357 95	Surface Soil	0 0 5'	Radionuclides	HPGe	Alpha Spec
		CN44-A000	2085457 44	750357 95	Surface Soil	0-0 5'	Metals	6200	6010
		CN44-A000	2085457 44	750357 95	Surface Soil	0-0 5	SVOCs	N/A	8270
		CN46-A000	2085444 35	750722 00	Surface Soil	0 0 5	Radionuclides	HPGe	Alpha Spec
		CN46-A000	2085444 35	750722 00	Surface Soil	0-0 5	Metals	6200	6010
		CN46-A000	2085444 35	750722 00	Surface Soil	0-0 5	SVOCs	N/A	8270
		CN46-A001	2085450 30	750649 43	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CN46-A001	2085450 30	750649 43	Surface Soil	0-0 5'	Metals	6200	6010
		CN46 A001	2085450 30	750649 43	Surface Soil	0-0 5'	SVOCs	N/A	8270
		CN46 A002	2085387 24	750607 79	Surface Soil	0-0 5'	Radionuclides	HPGe	Alpha Spec
		CN46-A002	2085387 24	750607 79	Surface Soil	0-0 5	Metals	6200	6010
		CN46 A002	2085387 24	750607 79	Surface Soil	0-0 5	SVOCs	N/A	8270
		CN45-A000	2085455 06	750503 10	Surface Soil	0 0 5	Radionuclides	HPGe	Alpha Spec
		CN45 A000	2085455 06	750503 10	Surface Soil	0-0 5	Metals	6200	6010
		CN45-A000	2085455 06	750503 10	Surface Soil	0-0 5	SVOCs	N/A	8270
		CN45-A001	2085516 92	750398 40	Surface Soil	0-0 5	Radionuclides	HPGe	Alpha Spec
		CN45-A001	2085516 92	750398 40	Surface Soil	0-0 5	Metals	6200	6010
		CN45-A001	2085516 92	750398 40	Surface Soil	0-0 5	SVOCs	N/A	8270

N/A = not applicable

Table 3

IHSS Group 000-1 Soil Results Greater than Background Mean Plus Two Standard Deviations or Reporting Limits

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900 176	CN46-000	2085444 40	750722 10	Bis(2-Ethylhexyl)Phthalate	0	0	930 00	690	32000000	320000	N/A	ug/kg
900 176	CM46 001	2085254 10	750748 30	Bis(2-Ethylhexyl)Phthalate	0	0	1200 00	720	32000000	320000	N/A	ug/kg
900-176	CM46 002	2085319 50	750699 70	Bis(2-Ethylhexyl)Phthalate	0	0	75000 00	14000	32000000	320000	N/A	ug/kg
900-176	CM46-002	2085319 50	750699 70	Aroclor 1254	0	0	66 00	4 5	2240 00	224000 00	N/A	ug/kg
900 176	CM46-002	2085319 50	750699 70	Aroclor 1260	0	0	78 00	5	2240 00	224000 00	N/A	ug/kg
900 165	CP46-003	2085879 70	750701 80	2,4,6-Trinitrophenol	0	0 5	2700 00	0	N/A	N/A	N/A	ug/kg
900 165	CP46-002	2085884 50	750630 40	2,4,6-Trinitrophenol	0	0 5	2700 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46-005	2086003 60	750708 90	2,4,6-Trinitrophenol	0	0 5	2700 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46-003	2086011 80	750563 80	2,4,6-Trinitrophenol	0	0 5	2700 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46 000	2085945 10	750742 30	2,4,6-Trinitrophenol	0	0 5	2800 00	0	N/A	N/A	N/A	ug/kg
900-176	CM46 001	2085254 10	750748 30	2,4,6-Trinitrophenol	0	0	2900 00	0	N/A	N/A	N/A	ug/kg
900 176	CM46 002	2085319 50	750699 70	2,4,6-Trinitrophenol	0	0	2900 00	0	N/A	N/A	N/A	ug/kg
900 176	CM46 000	2085444 40	750722 10	2,4,6-Trinitrophenol	0	0	3000 00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085330 10	750502 20	2,4,6-Trinitrophenol	0	0	3100 00	0	N/A	N/A	N/A	ug/kg
900 176	CN45 001	2085516 80	750398 20	2,4,6-Trinitrophenol	0	0	3100 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-001	2085940 50	750668 40	2,4,6-Trinitrophenol	0	0 5	3100 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46 002	2085950 00	750598 30	2,4,6-Trinitrophenol	0	0 5	3100 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ45-000	2085951 20	750524 50	2,4,6-Trinitrophenol	0	0 5	3100 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46-006	2086073 80	750599 60	2,4,6-Trinitrophenol	0	0 5	3100 00	0	N/A	N/A	N/A	ug/kg
900 176	CN46-001	2085450 20	750649 50	2,4,6-Trinitrophenol	0	0	3200 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	2,4,6-Trinitrophenol	0	0 5	3200 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-004	2086008 20	750640 00	2,4,6-Trinitrophenol	0	0 5	3200 00	0	N/A	N/A	N/A	ug/kg
900 176	CN44-000	2085457 40	750357 90	2,4,6-Trinitrophenol	0	0	3300 00	0	N/A	N/A	N/A	ug/kg
900 165	CO46-000	2085633 50	750622 10	2,4,6-Trinitrophenol	0	0 5	3300 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-002	2085387 30	750607 80	2,4,6-Trinitrophenol	0	0	3400 00	0	N/A	N/A	N/A	ug/kg
900-176	CN45-000	2085455 00	750503 10	2,4,6-Trinitrophenol	0	0	3500 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-000	2085821 50	750662 60	2,4,6-Trinitrophenol	0	0 5	3800 00	0	N/A	N/A	N/A	ug/kg
900 165	CP46-001	2085826 20	750589 90	2,4,6-Trinitrophenol	0	0 5	3800 00	0	N/A	N/A	N/A	ug/kg

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CO46-001	2085695 30	750660 20	Pyrene	0	0.5	1600.00	710	57600000	57600000	N/A	ug/kg
900-165	CP46-001	2085826 20	750589 90	Americium-241	0	0.5	0.20	4	215	38	0.02	pCi/g
900-165	CP46-002	2085884 50	750630 40	Americium-241	0	0.5	0.30	4	215	38	0.02	pCi/g
900-165	CO46-001	2085695 30	750660 20	Americium-241	0	0.5	0.53	4	215	38	0.02	pCi/g
900-176	CM46-002	2085319 50	750699 70	Americium-241	0	0	0.83	4	215	38	0.02	pCi/g
900-176	CN46-000	2085444 40	750722 10	Americium-241	0	0	0.83	4	215	38	0.02	pCi/g
900-176	CM46-002	2085319 50	750699 70	Americium-241	0	0	0.83	4	215	38	0.02	pCi/g
900-176	CN44-000	2085457 40	750357 90	Americium-241	0	0	0.91	4	215	38	0.02	pCi/g
900-176	CN45-000	2085455 00	750503 10	Americium-241	0	0	1.30	4	215	38	0.02	pCi/g
900-176	CN45-001	2085516 80	750398 20	Americium-241	0	0	1.30	4	215	38	0.02	pCi/g
900-176	CM46-001	2085254 10	750748 30	Americium-241	0	0	1.50	4	215	38	0.02	pCi/g
900-176	CM45-001	2085330 10	750502 20	Americium-241	0	0	2.00	4	215	38	0.02	pCi/g
900-176	CM45-001	2085330 10	750502 20	Uranium-235	0	0	0.10	1	135	24	0.09	pCi/g
900 176	CN46-001	2085450 20	750649 50	Uranium-235	0	0	0.10	1	135	24	0.09	pCi/g
900-165	CO46-001	2085695 30	750660 20	Uranium-235	0	0.5	0.10	1	135	24	0.09	pCi/g
900-176	CN45-001	2085516 80	750398 20	Uranium-235	0	0	0.11	1	135	24	0.09	pCi/g
900-165	CQ46-003	2086011 80	750563 80	Uranium-235	0	0.5	0.15	1	135	24	0.09	pCi/g
900-165	CP46-000	2085821 50	750662 60	Uranium-235	0	0.5	0.16	1	135	24	0.09	pCi/g
900-165	CQ46-005	2086003 60	750708 90	Uranium-235	0	0.5	0.16	1	135	24	0.09	pCi/g
900-176	CM46-001	2085254 10	750748 30	Uranium-235	0	0	0.17	1	135	24	0.09	pCi/g
900-165	CP46-003	2085879 70	750701 80	Uranium 235	0	0.5	0.18	1	135	24	0.09	pCi/g
900-165	CQ45-000	2085951 20	750524 50	Uranium-235	0	0.5	0.18	1	135	24	0.09	pCi/g
900-165	CQ46-000	2085945 10	750742 30	Uranium-235	0	0.5	0.19	1	135	24	0.09	pCi/g
900-165	CQ46-002	2085950 00	750598 30	Uranium 235	0	0.5	0.19	1	135	24	0.09	pCi/g
900-165	CQ46-006	2086073 80	750599 60	Uranium-235	0	0.5	0.20	1	135	24	0.09	pCi/g
900-176	CN45-000	2085455 00	750503 10	Uranium-235	0	0	0.22	1	135	24	0.09	pCi/g
900-176	CN44-000	2085457 40	750357 90	Uranium-235	0	0	0.23	1	135	24	0.09	pCi/g
900-165	CQ46-004	2086008 20	750640 00	Uranium-235	0	0.5	0.23	1	135	24	0.09	pCi/g
900-176	CM46-002	2085319 50	750699 70	Uranium 235	0	0	0.25	1	135	24	0.09	pCi/g
900-176	CM46-002	2085319 50	750699 70	Terphenyl-D14	0	0	1800.00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085330 10	750502 20	Terphenyl-D14	0	0	1800.00	0	N/A	N/A	N/A	ug/kg

Characterization Data Summary IHSS Group 000-1

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-176	CM46-001	2085254 10	750748 30	Terphenyl-D14	0	0	1900 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	Terphenyl-D14	0	0.5	1900 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-003	2086011 80	750563 80	Terphenyl-D14	0	0.5	1900 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-000	2085444 40	750722 10	Terphenyl-D14	0	0	2000 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-003	2085879 70	750701 80	Terphenyl-D14	0	0.5	2000 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-002	2085884 50	750630 40	Terphenyl-D14	0	0.5	2000 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-001	2085940 50	750668 40	Terphenyl-D14	0	0.5	2000 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-005	2086003 60	750708 90	Terphenyl-D14	0	0.5	2000 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-006	2086073 80	750599 60	Terphenyl-D14	0	0.5	2000 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-001	2085450 20	750649 50	Terphenyl-D14	0	0	2100 00	0	N/A	N/A	N/A	ug/kg
900-176	CN45-001	2085516 80	750398 20	Terphenyl-D14	0	0	2100 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-002	2085950 00	750598 30	Terphenyl-D14	0	0.5	2100 00	0	N/A	N/A	N/A	ug/kg
900-176	CN44-000	2085457 40	750357 90	Terphenyl-D14	0	0	2200 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-000	2085633 50	750622 10	Terphenyl-D14	0	0.5	2200 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-000	2085945 10	750742 30	Terphenyl-D14	0	0.5	2200 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-004	2086008 20	750640 00	Terphenyl-D14	0	0.5	2200 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-002	2085387 30	750607 80	Terphenyl-D14	0	0	2300 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ45-000	2085951 20	750524 50	Terphenyl-D14	0	0.5	2300 00	0	N/A	N/A	N/A	ug/kg
900-176	CN45-000	2085455 00	750503 10	Terphenyl-D14	0	0	2400 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-000	2085821 50	750662 60	Terphenyl-D14	0	0.5	2500 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-001	2085826 20	750589 90	Terphenyl-D14	0	0.5	2600 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	Fluoranthene	0	0.5	1900 00	710	76800000	76800000	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	Benzo(K)Fluoranthene	0	0.5	750 00	710	6140000	61400	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	Chrysene	0	0.5	790 00	710	61400000	614000	N/A	ug/kg
900-165	CQ46-003	2086011 80	750563 80	2-Fluorobiphenyl	0	0.5	1600 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-003	2085879 70	750701 80	2-Fluorobiphenyl	0	0.5	1700 00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-001	2085254 10	750748 30	2-Fluorobiphenyl	0	0	1900 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-002	2085387 30	750607 80	2-Fluorobiphenyl	0	0	1900 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-000	2085444 40	750722 10	2-Fluorobiphenyl	0	0	1900 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-002	2085884 50	750630 40	2-Fluorobiphenyl	0	0.5	1900 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-001	2085940 50	750668 40	2-Fluorobiphenyl	0	0.5	1900 00	0	N/A	N/A	N/A	ug/kg

12

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CQ46-000	2085945 10	750742 30	2-Fluorobiphenyl	0	0.5	1900.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-002	2085950 00	750598 30	2-Fluorobiphenyl	0	0.5	1900.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ45-000	2085951 20	750524 50	2-Fluorobiphenyl	0	0.5	1900.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-005	2086003 60	750708 90	2-Fluorobiphenyl	0	0.5	1900.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-006	2086073 80	750599 60	2-Fluorobiphenyl	0	0.5	1900.00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085330 10	750502 20	2-Fluorobiphenyl	0	0	2000.00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085516 80	750398 20	2-Fluorobiphenyl	0	0	2000.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-004	2086008 20	750640 00	2-Fluorobiphenyl	0	0.5	2000.00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-002	2085319 50	750699 70	2-Fluorobiphenyl	0	0	2100.00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-001	2085450 20	750649 50	2-Fluorobiphenyl	0	0	2100.00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-000	2085455 00	750503 10	2-Fluorobiphenyl	0	0	2100.00	0	N/A	N/A	N/A	ug/kg
900-176	CM44-000	2085457 40	750357 90	2-Fluorobiphenyl	0	0	2100.00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-000	2085633 50	750622 10	2-Fluorobiphenyl	0	0.5	2200.00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	2-Fluorobiphenyl	0	0.5	2200.00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-000	2085821 50	750662 60	2-Fluorobiphenyl	0	0.5	2300.00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-001	2085826 20	750589 90	2-Fluorobiphenyl	0	0.5	2300.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-003	2086011 80	750563 80	O-Fluorophenol	0	0.5	2100.00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-001	2085254 10	750748 30	O-Fluorophenol	0	0	2600.00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-003	2085879 70	750701 80	O-Fluorophenol	0	0.5	2700.00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-002	2085884 50	750630 40	O-Fluorophenol	0	0.5	2700.00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085516 80	750398 20	O-Fluorophenol	0	0	2800.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-005	2086003 60	750708 90	O-Fluorophenol	0	0.5	2800.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-006	2086073 80	750599 60	O-Fluorophenol	0	0.5	2800.00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-002	2085387 30	750607 80	O-Fluorophenol	0	0	2900.00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085330 10	750599 70	O-Fluorophenol	0	0	3000.00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-000	2085444 40	750722 10	O-Fluorophenol	0	0	3000.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-001	2085940 50	750668 40	O-Fluorophenol	0	0.5	3000.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-000	2085943 10	750742 30	O-Fluorophenol	0	0.5	3100.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-002	2085950 00	750598 30	O-Fluorophenol	0	0.5	3100.00	0	N/A	N/A	N/A	ug/kg
900-165	CQ45-000	2085951 20	750524 50	O-Fluorophenol	0	0.5	3100.00	0	N/A	N/A	N/A	ug/kg

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CQ46-004	2086008 20	750640 00	O-Fluorophenol	0	0.5	3100 00	0	N/A	N/A	N/A	ug/kg
900-176	CN44-000	208457 40	750357 90	O-Fluorophenol	0	0	3200 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-001	208549 50	750649 50	O-Fluorophenol	0	0	3300 00	0	N/A	N/A	N/A	ug/kg
900-176	CN45-000	208545 00	750503 10	O-Fluorophenol	0	0	3300 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-000	2085633 50	750622 10	O-Fluorophenol	0	0.5	3300 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	O-Fluorophenol	0	0.5	3300 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-000	2085821 50	750662 60	O-Fluorophenol	0	0.5	3600 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-001	2085826 20	750589 90	O-Fluorophenol	0	0.5	3700 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-003	2086011 80	750563 80	Nitrobenzene-D5	0	0.5	1400 00	0	N/A	N/A	N/A	ug/kg
900-176	CM46 001	2085254 10	750748 30	Nitrobenzene D5	0	0	1900 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-003	2085879 70	750701 80	Nitrobenzene-D5	0	0.5	1900 00	0	N/A	N/A	N/A	ug/kg
900 176	CN45-001	2085516 80	750398 20	Nitrobenzene-D5	0	0	2000 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46 005	2086003 60	750708 90	Nitrobenzene-D5	0	0.5	2000 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-006	2086073 80	750599 60	Nitrobenzene-D5	0	0.5	2000 00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085330 10	750502 20	Nitrobenzene-D5	0	0	2100 00	0	N/A	N/A	N/A	ug/kg
900 176	CN46-000	2085444 40	750722 10	Nitrobenzene D5	0	0	2100 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-002	2085884 50	750630 40	Nitrobenzene-D5	0	0.5	2100 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-001	2085940 50	750668 40	Nitrobenzene-D5	0	0.5	2100 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-002	2085950 00	750598 30	Nitrobenzene-D5	0	0.5	2100 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ45-000	2085951 20	750524 50	Nitrobenzene-D5	0	0.5	2100 00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-002	2085319 50	750699 70	Nitrobenzene-D5	0	0	2200 00	0	N/A	N/A	N/A	ug/kg
900 176	CN46-002	2085387 30	750607 80	Nitrobenzene-D5	0	0	2200 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-000	2085945 10	750742 30	Nitrobenzene-D5	0	0.5	2200 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46-004	2086008 20	750640 00	Nitrobenzene D5	0	0.5	2200 00	0	N/A	N/A	N/A	ug/kg
900 176	CN46-001	2085450 20	750649 50	Nitrobenzene-D5	0	0	2300 00	0	N/A	N/A	N/A	ug/kg
900 165	CO46-000	2085633 50	750622 10	Nitrobenzene D5	0	0.5	2300 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	Nitrobenzene-D5	0	0.5	2300 00	0	N/A	N/A	N/A	ug/kg
900-176	CN45-000	2085455 00	750503 10	Nitrobenzene-D5	0	0	2400 00	0	N/A	N/A	N/A	ug/kg
900 176	CN44-000	2085457 40	750357 90	Nitrobenzene-D5	0	0	2400 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-000	2085821 50	750662 60	Nitrobenzene-D5	0	0.5	2500 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-001	2085826 20	750589 90	Nitrobenzene D5	0	0.5	2600 00	0	N/A	N/A	N/A	ug/kg

14

Characterization Data Summary IHSS Group 000-1

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900 165	CQ46-003	2086011 80	750563 80	Phenol-D5	0	0.5	2200 00	0	N/A	N/A	N/A	ug/kg
900 165	CP46-003	2085879 70	750701 80	Phenol-D5	0	0.5	2700 00	0	N/A	N/A	N/A	ug/kg
900 176	CM46-001	2085254 10	750748 30	Phenol-D5	0	0	2800 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46-005	2086003 60	750708 90	Phenol-D5	0	0.5	2800 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-006	2086073 80	750599 60	Phenol-D5	0	0.5	2800 00	0	N/A	N/A	N/A	ug/kg
900-176	CN45-001	2085516 80	750398 20	Phenol-D5	0	0	2900 00	0	N/A	N/A	N/A	ug/kg
900 165	CP46-002	2085884 50	750630 40	Phenol-D5	0	0.5	2900 00	0	N/A	N/A	N/A	ug/kg
900-176	CM46-002	2085319 50	750699 70	Phenol-D5	0	0	3000 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-002	2085387 30	750607 80	Phenol-D5	0	0	3000 00	0	N/A	N/A	N/A	ug/kg
900 176	CN46-000	2085444 40	750722 10	Phenol-D5	0	0	3000 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46 001	2085940 50	750668 40	Phenol-D5	0	0.5	3000 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ46-002	2085950 00	750598 30	Phenol-D5	0	0.5	3000 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46-004	2086008 20	750640 00	Phenol-D5	0	0.5	3000 00	0	N/A	N/A	N/A	ug/kg
900-176	CM45-001	2085330 10	750502 20	Phenol-D5	0	0	3100 00	0	N/A	N/A	N/A	ug/kg
900 165	CQ46 000	2085945 10	750742 30	Phenol D5	0	0.5	3100 00	0	N/A	N/A	N/A	ug/kg
900-165	CQ45-000	2085951 20	750524 50	Phenol-D5	0	0.5	3100 00	0	N/A	N/A	N/A	ug/kg
900-176	CN45-000	2085455 00	750503 10	Phenol-D5	0	0	3200 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-000	2085613 50	750622 10	Phenol-D5	0	0.5	3200 00	0	N/A	N/A	N/A	ug/kg
900-165	CO46-001	2085695 30	750660 20	Phenol-D5	0	0.5	3200 00	0	N/A	N/A	N/A	ug/kg
900-176	CN46-001	2085450 20	750649 50	Phenol-D5	0	0	3300 00	0	N/A	N/A	N/A	ug/kg
900 176	CN44-000	2085457 40	750357 90	Phenol-D5	0	0	3300 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-000	2085821 50	750662 60	Phenol-D5	0	0.5	3500 00	0	N/A	N/A	N/A	ug/kg
900-165	CP46-001	2085826 20	750589 90	Phenol-D5	0	0.5	3700 00	0	N/A	N/A	N/A	ug/kg
900 165	CO46-001	2085695 30	750660 20	Benzo(A)Pyrene	0	0.5	750 00	710	61400	614	N/A	ug/kg
900 165	CO46-001	2085695 30	750660 20	Benzo(A)Anthracene	0	0.5	750 00	710	61400	6140	N/A	ug/kg
900-165	CP46-002	2085884 50	750630 40	Iron	0	0.5	19700 00	2500	576000	576000	18037 00	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Iron	0	0.5	21200 00	2500	576000	576000	18037 00	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Iron	0	0.5	21700 00	2500	576000	576000	18037 00	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Iron	0	0.5	22600 00	2500	576000	576000	18037 00	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Iron	0	0.5	25300 00	2500	576000	576000	18037 00	mg/kg
900 165	CQ46-006	2086073 80	750599 60	Iron	0	0.5	26500 00	2500	576000	576000	18037 00	mg/kg

15

Characterization Data Summary IHSS Group 000-1

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CO46-000	2085633 50	750622 10	Iron	0	0.5	27300.00	2500	576000	576000	18037.00	mg/kg
900-165	CO46-001	2085695 30	750660 20	Iron	0	0.5	27300.00	2500	576000	576000	18037.00	mg/kg
900-176	CM45-001	2085330 10	750502 20	Iron	0	0	27700.00	2500	576000	576000	18037.00	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Iron	0	0.5	28300.00	2500	576000	576000	18037.00	mg/kg
900-165	CP46-000	2085821 50	750662 60	Iron	0	0.5	28400.00	2500	576000	576000	18037.00	mg/kg
900-176	CN46-000	2085444 40	750722 10	Iron	0	0	29000.00	2500	576000	576000	18037.00	mg/kg
900-176	CN46-002	2085387 30	750607 80	Iron	0	0	29300.00	2500	576000	576000	18037.00	mg/kg
900-165	CP46-003	2085879 70	750701 80	Iron	0	0.5	29500.00	2500	576000	576000	18037.00	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Iron	0	0.5	29700.00	2500	576000	576000	18037.00	mg/kg
000-101	CM47-003	2085314 60	750929 10	Iron	0	0	30400.00	2500	576000	576000	18037.00	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Iron	0	0.5	30700.00	2500	576000	576000	18037.00	mg/kg
000-101	CM47-004	2085314 60	750788 20	Iron	0	0	31000.00	2500	576000	576000	18037.00	mg/kg
900-1310	CM47-001	2085234 21	750889 92	Iron	0	0.5	31400.00	2500	576000	576000	18037.00	mg/kg
900-165	CP46-001	2085826 20	750589 90	Iron	0	0.5	31400.00	2500	576000	576000	18037.00	mg/kg
900-176	CM46-001	2085254 10	750748 30	Iron	0	0	33100.00	2500	576000	576000	18037.00	mg/kg
000-101	CN47-001	2085375 30	750825 60	Iron	0	0	33400.00	2500	576000	576000	18037.00	mg/kg
900-176	CN45-001	2085516 80	750398 20	Iron	0	0	34000.00	2500	576000	576000	18037.00	mg/kg
900-176	CN46-001	2085450 20	750649 50	Iron	0	0	35000.00	2500	576000	576000	18037.00	mg/kg
000-101	CN47-000	2085374 20	750899 30	Iron	0	0	35100.00	2500	576000	576000	18037.00	mg/kg
000-101	CM48-008	2085305 10	751001 60	Iron	0	0	35500.00	2500	576000	576000	18037.00	mg/kg
900-176	CN45-000	2085455 00	750503 10	Iron	0	0	38300.00	2500	576000	576000	18037.00	mg/kg
000-101	CN48-000	2085369 50	750968 40	Iron	0	0	39600.00	2500	576000	576000	18037.00	mg/kg
900-176	CN44-000	2085457 40	750357 90	Iron	0	0	41400.00	2500	576000	576000	18037.00	mg/kg
000-101	CN47-001	2085375 30	750825 60	Lead	0	0	56.20	20	1000	1000	54.62	mg/kg
900-165	CO46-001	2085695 30	750660 20	Lead	0	0.5	63.20	20	1000	1000	54.62	mg/kg
900-176	CN46-000	2085444 40	750722 10	Lead	0	0	68.60	20	1000	1000	54.62	mg/kg
900-176	CN46-000	2085444 40	750722 10	Lead	0	0	68.60	20	1000	1000	54.62	mg/kg
900-176	CM45-001	2085330 10	750502 20	Lead	0	0	75.10	20	1000	1000	54.62	mg/kg
900-176	CM45-001	2085330 10	750502 20	Lead	0	0	75.10	20	1000	1000	54.62	mg/kg
900-176	CN45-000	2085455 00	750503 10	Lead	0	0	92.70	20	1000	1000	54.62	mg/kg
900-176	CM46-001	2085254 10	750748 30	Lead	0	0	236.00	20	1000	1000	54.62	mg/kg

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CQ46-001	2085940 50	750668 40	Manganese	0	0.5	436.00	200	83600	83600	365.08	mg/kg
900-101	CN48-000	2085369 50	750968 40	Manganese	0	0	452.00	200	83600	83600	365.08	mg/kg
900-176	CN46-000	2085444 40	750722 10	Manganese	0	0	453.00	200	83600	83600	365.08	mg/kg
900-165	CQ46-001	2085695 30	750660 20	Manganese	0	0.5	473.00	200	83600	83600	365.08	mg/kg
900-165	CP46-000	2085821 50	750662 60	Manganese	0	0.5	476.00	200	83600	83600	365.08	mg/kg
900-176	CN45-001	2085516 80	750398 20	Manganese	0	0	480.00	200	83600	83600	365.08	mg/kg
900-165	CP46-003	2085879 70	750701 80	Manganese	0	0.5	480.00	200	83600	83600	365.08	mg/kg
900-176	CN46-001	2085450 20	750649 50	Manganese	0	0	485.00	200	83600	83600	365.08	mg/kg
900-165	CQ46-003	2086011 80	750561 80	Manganese	0	0.5	499.00	200	83600	83600	365.08	mg/kg
900-165	CP46-002	2085884 50	750630 40	Manganese	0	0.5	506.00	200	83600	83600	365.08	mg/kg
900-101	CN47-000	2085374 20	750899 30	Manganese	0	0	511.00	200	83600	83600	365.08	mg/kg
900-101	CN48-008	2085305 10	751001 60	Manganese	0	0	518.00	200	83600	83600	365.08	mg/kg
900-176	CN46-001	2085254 10	750748 30	Manganese	0	0	525.00	200	83600	83600	365.08	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Manganese	0	0.5	534.00	200	83600	83600	365.08	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Manganese	0	0.5	537.00	200	83600	83600	365.08	mg/kg
900-101	CN47-004	2085314 60	750788 20	Manganese	0	0	543.00	200	83600	83600	365.08	mg/kg
900-165	CQ46-000	2085633 50	750622 10	Manganese	0	0.5	557.00	200	83600	83600	365.08	mg/kg
900-176	CN45-000	2085455 00	750503 10	Manganese	0	0	579.00	200	83600	83600	365.08	mg/kg
900-176	CN45-001	2085330 10	750502 20	Manganese	0	0	621.00	200	83600	83600	365.08	mg/kg
900-176	CN46-002	2085387 30	750607 80	Manganese	0	0	637.00	200	83600	83600	365.08	mg/kg
900-176	CN44-000	2085457 40	750357 90	Manganese	0	0	686.00	200	83600	83600	365.08	mg/kg
900-176	CN46-002	2085319 50	750699 70	Nickel	0	0	20.90	60	38400	38400	14.91	mg/kg
900-176	CN46-002	2085319 50	750699 70	Nickel	0	0	20.90	60	38400	38400	14.91	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Nickel	0	0.5	27.40	60	38400	38400	14.91	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Nickel	0	0.5	29.20	60	38400	38400	14.91	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Nickel	0	0.5	30.50	60	38400	38400	14.91	mg/kg
900-165	CP46-003	2085879 70	750701 80	Nickel	0	0.5	32.10	60	38400	38400	14.91	mg/kg
900-165	CQ46-000	2085633 50	750622 10	Nickel	0	0.5	33.40	60	38400	38400	14.91	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Nickel	0	0.5	34.10	60	38400	38400	14.91	mg/kg
900-165	CP46-002	2085884 50	750630 40	Nickel	0	0.5	35.00	60	38400	38400	14.91	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Nickel	0	0.5	35.50	60	38400	38400	14.91	mg/kg

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CQ46-001	2085940 50	750668 40	Nickel	0	0.5	35.70	60	38400	38400	14.91	mg/kg
900-165	CP46-000	2085821 50	750662 60	Nickel	0	0.5	36.40	60	38400	38400	14.91	mg/kg
900-176	CM45-001	2085330 10	750502 20	Nickel	0	0	37.60	60	38400	38400	14.91	mg/kg
900-176	CN46-000	2085444 40	750722 10	Nickel	0	0	38.00	60	38400	38400	14.91	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Nickel	0	0.5	38.10	60	38400	38400	14.91	mg/kg
900-165	CP46-001	2085826 20	750589 90	Nickel	0	0.5	39.30	60	38400	38400	14.91	mg/kg
000-101	CN47-001	2085375 30	750825 60	Nickel	0	0	39.80	60	38400	38400	14.91	mg/kg
000-101	CN47-001	2085375 30	750825 60	Nickel	0	0	39.80	60	38400	38400	14.91	mg/kg
900-176	CN46-001	2085450 20	750649 50	Nickel	0	0	40.00	60	38400	38400	14.91	mg/kg
900-176	CN46-002	2085387 30	750607 80	Nickel	0	0	40.70	60	38400	38400	14.91	mg/kg
900-176	CN44-000	2085457 40	750357 90	Nickel	0	0	41.40	60	38400	38400	14.91	mg/kg
900-176	CN45-001	2085516 80	750398 20	Nickel	0	0	41.50	60	38400	38400	14.91	mg/kg
000-101	CM47-004	2085314 60	750788 20	Nickel	0	0	42.20	60	38400	38400	14.91	mg/kg
900-176	CN45-000	2085455 00	750503 10	Nickel	0	0	42.60	60	38400	38400	14.91	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Nickel	0	0.5	43.10	60	38400	38400	14.91	mg/kg
900-176	CM46-001	2085254 10	750748 30	Nickel	0	0	46.90	60	38400	38400	14.91	mg/kg
000-101	CN47-000	2085374 20	750899 30	Nickel	0	0	47.20	60	38400	38400	14.91	mg/kg
900-165	CO46-001	2085695 30	750660 20	Nickel	0	0.5	47.30	60	38400	38400	14.91	mg/kg
000-101	CM48-008	2085305 10	751001 60	Nickel	0	0	48.60	60	38400	38400	14.91	mg/kg
000-101	CM47-003	2085314 60	750929 10	Nickel	0	0	49.60	60	38400	38400	14.91	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Potassium	0	0.5	15500.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CP46-002	2085884 50	750630 40	Potassium	0	0.5	16200.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Potassium	0	0.5	17000.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Potassium	0	0.5	17200.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Potassium	0	0.5	17200.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Potassium	0	0.5	17300.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Potassium	0	0.5	17800.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CP46-001	2085826 20	750589 90	Potassium	0	0.5	18600.00	5000	N/A	N/A	2967.20	mg/kg
900-176	CM46-001	2085254 10	750748 30	Potassium	0	0	19000.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Potassium	0	0.5	19200.00	5000	N/A	N/A	2967.20	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Potassium	0	0.5	22100.00	5000	N/A	N/A	2967.20	mg/kg

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CP46-000	2085821 50	750662 60	Potassium	0	0.5	22700 00	5000	N/A	N/A	2967 20	mg/kg
000-101	CM48-008	2085305 10	751001 60	Potassium	0	0	22900 00	5000	N/A	N/A	2967 20	mg/kg
900-165	CP46-003	2085879 70	750701 80	Potassium	0	0.5	23100 00	5000	N/A	N/A	2967 20	mg/kg
900-176	CM45-001	2085330 10	750502 20	Potassium	0	0	23500 00	5000	N/A	N/A	2967 20	mg/kg
900-176	CM45-001	2085516 80	750398 20	Potassium	0	0	24100 00	5000	N/A	N/A	2967 20	mg/kg
900-176	CM46-002	2085387 30	750607 80	Potassium	0	0	24200 00	5000	N/A	N/A	2967 20	mg/kg
000-101	CM47-004	2085314 60	750788 20	Potassium	0	0	24600 00	5000	N/A	N/A	2967 20	mg/kg
900 176	CM46-000	2085444 40	750722 10	Potassium	0	0	25600 00	5000	N/A	N/A	2967 20	mg/kg
900-165	CO46-000	2085633 50	750622 10	Potassium	0	0.5	25800 00	5000	N/A	N/A	2967 20	mg/kg
900-176	CM44-000	2085457 40	750357 90	Potassium	0	0	26100 00	5000	N/A	N/A	2967 20	mg/kg
900 165	CO46-001	2085695 30	750660 20	Potassium	0	0.5	26100 00	5000	N/A	N/A	2967 20	mg/kg
900-176	CM45-000	2085455 00	750503 10	Potassium	0	0	29300 00	5000	N/A	N/A	2967 20	mg/kg
000 101	CM47-001	2085375 30	750825 60	Potassium	0	0	30500 00	5000	N/A	N/A	2967 20	mg/kg
900-176	CM46-001	2085450 20	750649 50	Potassium	0	0	30800 00	5000	N/A	N/A	2967 20	mg/kg
900-176	CM46-002	2085319 50	750699 70	Potassium	0	0	33000 00	5000	N/A	N/A	2967 20	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Strontium	0	0.5	104 00	250	1000000	1000000	48 94	mg/kg
900-165	CP46-002	2085884 50	750630 40	Strontium	0	0.5	108 00	250	1000000	1000000	48 94	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Strontium	0	0.5	114 00	250	1000000	1000000	48 94	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Strontium	0	0.5	119 00	250	1000000	1000000	48 94	mg/kg
900-165	CQ46 006	2086073 80	750599 60	Strontium	0	0.5	129 00	250	1000000	1000000	48 94	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Strontium	0	0.5	133 00	250	1000000	1000000	48 94	mg/kg
900-165	CQ46 000	2085945 10	750742 30	Strontium	0	0.5	167 00	250	1000000	1000000	48 94	mg/kg
000-101	CM48-000	2085369 50	750968 40	Strontium	0	0	179 00	250	1000000	1000000	48 94	mg/kg
900-165	CP46-001	2085826 20	750589 90	Strontium	0	0.5	179 00	250	1000000	1000000	48 94	mg/kg
000-101	CM48-008	2085305 10	751001 60	Strontium	0	0	192 00	250	1000000	1000000	48 94	mg/kg
900-165	CP46 000	2085821 50	750662 60	Strontium	0	0.5	194 00	250	1000000	1000000	48 94	mg/kg
000-101	CM47 003	2085314 60	750929 10	Strontium	0	0	204 00	250	1000000	1000000	48 94	mg/kg
000 101	CM47 000	2085374 20	750899 30	Strontium	0	0	205 00	250	1000000	1000000	48 94	mg/kg
900 165	CO46 000	2085633 50	750622 10	Strontium	0	0.5	207 00	250	1000000	1000000	48 94	mg/kg
900-176	CM46-002	2085387 30	750607 80	Strontium	0	0	209 00	250	1000000	1000000	48 94	mg/kg
900 176	CM44 000	2085457 40	750357 90	Strontium	0	0	214 00	250	1000000	1000000	48 94	mg/kg

14

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CP46-003	2085879 70	750701 80	Strontium	0	0.5	217.00	250	1000000	1000000	48.94	mg/kg
900-176	CM45-001	2085330 10	750502 20	Strontium	0	0	222.00	250	1000000	1000000	48.94	mg/kg
900-165	CO46-001	2085695 30	750660 20	Strontium	0	0.5	229.00	250	1000000	1000000	48.94	mg/kg
900-176	CM46-001	2085254 10	750748 30	Strontium	0	0	230.00	250	1000000	1000000	48.94	mg/kg
900-176	CN45-001	2085516 80	750398 20	Strontium	0	0	230.00	250	1000000	1000000	48.94	mg/kg
000-101	CM47-004	2085314 60	750788 20	Strontium	0	0	242.00	250	1000000	1000000	48.94	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Strontium	0	0.5	251.00	250	1000000	1000000	48.94	mg/kg
000-101	CN47-001	2085375 30	750825 60	Strontium	0	0	261.00	250	1000000	1000000	48.94	mg/kg
900-176	CN45-000	2085455 00	750503 10	Strontium	0	0	261.00	250	1000000	1000000	48.94	mg/kg
900-176	CN46-000	2085444 40	750722 10	Strontium	0	0	294.00	250	1000000	1000000	48.94	mg/kg
900-176	CM46-002	2085319 50	750699 70	Strontium	0	0	307.00	250	1000000	1000000	48.94	mg/kg
900-176	CN46-001	2085450 20	750649 50	Strontium	0	0	314.00	250	1000000	1000000	48.94	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Strontium	0	0.5	483.00	250	1000000	1000000	48.94	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Arsenic	0	0.5	10.10	25	299	2.99	10.09	mg/kg
900-176	CN46-001	2085450 20	750649 50	Arsenic	0	0	10.20	25	299	2.99	10.09	mg/kg
900-176	CN46-001	2085450 20	750649 50	Arsenic	0	0	10.20	25	299	2.99	10.09	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Arsenic	0	0.5	10.30	25	299	2.99	10.09	mg/kg
000-101	CN47-001	2085375 30	750825 60	Arsenic	0	0	10.50	25	299	2.99	10.09	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Arsenic	0	0.5	10.90	25	299	2.99	10.09	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Arsenic	0	0.5	11.40	25	299	2.99	10.09	mg/kg
900-165	CO46-000	2085633 50	750622 10	Arsenic	0	0.5	11.80	25	299	2.99	10.09	mg/kg
900-176	CN44-000	2085457 40	750357 90	Arsenic	0	0	11.90	25	299	2.99	10.09	mg/kg
000-101	CM47-003	2085314 60	750929 10	Arsenic	0	0	12.00	25	299	2.99	10.09	mg/kg
900-176	CN46-002	2085387 30	750607 80	Arsenic	0	0	12.00	25	299	2.99	10.09	mg/kg
900-165	CP46-000	2085821 50	750662 60	Arsenic	0	0.5	12.40	25	299	2.99	10.09	mg/kg
900-176	CN45-001	2085516 80	750398 20	Arsenic	0	0	13.10	25	299	2.99	10.09	mg/kg
900-165	CP46-001	2085826 20	750589 90	Arsenic	0	0.5	13.90	25	299	2.99	10.09	mg/kg
900-176	CM46-001	2085254 10	750748 30	Arsenic	0	0	15.60	25	299	2.99	10.09	mg/kg
000-101	CN47-000	2085374 20	750899 30	Arsenic	0	0	16.00	25	299	2.99	10.09	mg/kg
900-176	CM46-002	2085319 50	750699 70	Arsenic	0	0	18.90	25	299	2.99	10.09	mg/kg
900-176	CM46-002	2085319 50	750699 70	Arsenic	0	0	18.90	25	299	2.99	10.09	mg/kg

20

Characterization Data Summary IHSS Group 000-1

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
000-101	CM48-008	2085405 10	751001 60	Arsenic	0	0	19 30	25	299	2 99	10 09	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Barium	0	0.5	537 00	150	133000	133000	141 26	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Barium	0	0.5	548 00	150	133000	133000	141 26	mg/kg
900-165	CP46-002	2085884 50	750630 40	Barium	0	0.5	580 00	150	133000	133000	141 26	mg/kg
900-165	CP46-001	2085826 20	750589 90	Barium	0	0.5	622 00	150	133000	133000	141 26	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Barium	0	0.5	632 00	150	133000	133000	141 26	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Barium	0	0.5	639 00	150	133000	133000	141 26	mg/kg
900-176	CM46-002	2085319 50	750699 70	Barium	0	0	655 00	150	133000	133000	141 26	mg/kg
900-176	CM46-001	2085254 10	750748 30	Barium	0	0	666 00	150	133000	133000	141 26	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Barium	0	0.5	668 00	150	133000	133000	141 26	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Barium	0	0.5	671 00	150	133000	133000	141 26	mg/kg
000-101	CM48-008	2085305 10	751001 60	Barium	0	0	681 00	150	133000	133000	141 26	mg/kg
000-101	CN48-000	2085369 50	750968 40	Barium	0	0	691 00	150	133000	133000	141 26	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Barium	0	0.5	727 00	150	133000	133000	141 26	mg/kg
900-176	CN44-000	2085457 40	750357 90	Barium	0	0	745 00	150	133000	133000	141 26	mg/kg
900-165	CP46-000	2085821 50	750662 60	Barium	0	0.5	748 00	150	133000	133000	141 26	mg/kg
900-176	CN45-001	2085516 80	750398 20	Barium	0	0	760 00	150	133000	133000	141 26	mg/kg
900-165	CO46-001	2085695 30	750660 20	Barium	0	0.5	798 00	150	133000	133000	141 26	mg/kg
000-101	CN47-000	2085374 20	750899 30	Barium	0	0	800 00	150	133000	133000	141 26	mg/kg
900-165	CP46-003	2085879 70	750701 80	Barium	0	0.5	805 00	150	133000	133000	141 26	mg/kg
900-176	CN46-002	2085387 30	750607 80	Barium	0	0	823 00	150	133000	133000	141 26	mg/kg
900-165	CO46-000	2085633 50	750622 10	Barium	0	0.5	823 00	150	133000	133000	141 26	mg/kg
900-176	CM45-001	2085330 10	750502 20	Barium	0	0	825 00	150	133000	133000	141 26	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Barium	0	0.5	832 00	150	133000	133000	141 26	mg/kg
900-176	CN46-000	2085444 40	750722 10	Barium	0	0	843 00	150	133000	133000	141 26	mg/kg
900-176	CN45-000	2085455 00	750503 10	Barium	0	0	911 00	150	133000	133000	141 26	mg/kg
900-176	CN46-001	2085450 20	750649 50	Barium	0	0	1050 00	150	133000	133000	141 26	mg/kg
900-165	CP46-000	2085821 50	750662 60	Cadmium	0	0.5	3 93	85	1920	1920	1 61	mg/kg
900-165	CO46-001	2085695 30	750660 20	Cadmium	0	0.5	4 19	85	1920	1920	1 61	mg/kg
900-165	CO46-000	2085633 50	750622 10	Cadmium	0	0.5	4 41	85	1920	1920	1 61	mg/kg
900-176	CM45-001	2085330 10	750502 20	Cadmium	0	0	6 03	85	1920	1920	1 61	mg/kg

Characterization Data Summary IHSS Group 000-1

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-176	CN46-000	2085444 40	750722 10	Cadmium	0	0	6 67	85	1920	1920	1 61	mg/kg
900-176	CN45-000	2085455 00	750503 10	Cadmium	0	0	8 36	85	1920	1920	1 61	mg/kg
900-176	CM46-001	2085254 10	750748 30	Cadmium	0	0	41 40	85	1920	1920	1 61	mg/kg
900-165	CP46 002	2085884 50	750630 40	Chromium	0	0.5	21 00	90	44300	4410	16 99	mg/kg
900 176	CN46 002	2085387 30	750607 80	Chromium	0	0	27 60	90	44300	4410	16 99	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Chromium	0	0.5	28 30	90	44300	4410	16 99	mg/kg
000-101	CM48-008	2085305 10	751001 60	Chromium	0	0	28 80	90	44300	4410	16 99	mg/kg
900 176	CN46-001	2085450 20	750649 50	Chromium	0	0	28 80	90	44300	4410	16 99	mg/kg
900-165	CP46-003	2085879 70	750701 80	Chromium	0	0.5	29 80	90	44300	4410	16 99	mg/kg
900 165	CO46 000	2085633 50	750622 10	Chromium	0	0.5	30 00	90	44300	4410	16 99	mg/kg
900-176	CN45-000	2085455 00	750503 10	Chromium	0	0	35 20	90	44300	4410	16 99	mg/kg
900-176	CM45 001	2085330 10	750502 20	Chromium	0	0	35 30	90	44300	4410	16 99	mg/kg
900 176	CM45-001	2085330 10	750502 20	Chromium	0	0	35 30	90	44300	4410	16 99	mg/kg
900 165	CQ46-005	2086003 60	750708 90	Chromium	0	0.5	35 40	90	44300	4410	16 99	mg/kg
900 176	CN44-000	2085457 40	750357 90	Chromium	0	0	35 60	90	44300	4410	16 99	mg/kg
900-165	CP46-001	2085826 20	750589 90	Chromium	0	0.5	35 80	90	44300	4410	16 99	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Chromium	0	0.5	36 20	90	44300	4410	16 99	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Chromium	0	0.5	37 50	90	44300	4410	16 99	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Chromium	0	0.5	38 40	90	44300	4410	16 99	mg/kg
900-165	CP46 000	2085821 50	750662 60	Chromium	0	0.5	39 60	90	44300	4410	16 99	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Chromium	0	0.5	40 50	90	44300	4410	16 99	mg/kg
900-176	CN45-001	2085516 80	750398 20	Chromium	0	0	41 60	90	44300	4410	16 99	mg/kg
000-101	CM47-003	2085314 60	750929 10	Chromium	0	0	42 30	90	44300	4410	16 99	mg/kg
000 101	CM47-003	2085314 60	750929 10	Chromium	0	0	42 30	90	44300	4410	16 99	mg/kg
900 165	CQ46-002	2085950 00	750598 30	Chromium	0	0.5	47 90	90	44300	4410	16 99	mg/kg
000 101	CQ47-000	2085944 60	750887 84	Chromium	0	0.5	48 00	90	44300	4410	16 99	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Chromium	0	0.5	48 90	90	44300	4410	16 99	mg/kg
000-101	CN48-000	2085369 50	750968 40	Chromium	0	0	50 00	90	44300	4410	16 99	mg/kg
900-176	CN46-000	2085444 40	750722 10	Chromium	0	0	57 60	90	44300	4410	16 99	mg/kg
000 101	CM47-004	2085314 60	750788 20	Chromium	0	0	63 30	90	44300	4410	16 99	mg/kg
000-101	CM47-004	2085314 60	750788 20	Chromium	0	0	63 30	90	44300	4410	16 99	mg/kg

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CQ46-001	2085695 30	750660 20	Chromium	0	0.5	86 50	90	44300	4410	16 99	mg/kg
900-176	CM46-001	2085254 10	750748 30	Chromium	0	0	125 00	90	44300	4410	16 99	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Copper	0	0.5	34 70	300	71100	71100	18 06	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Copper	0	0.5	51 00	300	71100	71100	18 06	mg/kg
900-165	CP46-002	2085884 50	750630 40	Copper	0	0.5	52 30	300	71100	71100	18 06	mg/kg
900-165	CO46-000	2085633 50	750622 10	Copper	0	0.5	54 90	300	71100	71100	18 06	mg/kg
900-176	CM45-001	2085330 10	750502 20	Copper	0	0	55 00	300	71100	71100	18 06	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Copper	0	0.5	55 60	300	71100	71100	18 06	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Copper	0	0.5	58 30	300	71100	71100	18 06	mg/kg
900-176	CM46-002	2085319 50	750699 70	Copper	0	0	62 50	300	71100	71100	18 06	mg/kg
900-165	CP46-000	2085821 50	750662 60	Copper	0	0.5	67 40	300	71100	71100	18 06	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Copper	0	0.5	69 60	300	71100	71100	18 06	mg/kg
900-176	CN46-001	2085450 20	750649 50	Copper	0	0	70 40	300	71100	71100	18 06	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Copper	0	0.5	74 30	300	71100	71100	18 06	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Copper	0	0.5	74 50	300	71100	71100	18 06	mg/kg
000-101	CM47-004	2085114 60	750788 20	Copper	0	0	76 20	300	71100	71100	18 06	mg/kg
900-176	CM46-001	2085254 10	750748 30	Copper	0	0	86 50	300	71100	71100	18 06	mg/kg
900-176	CN46-000	2085444 40	750722 10	Copper	0	0	94 10	300	71100	71100	18 06	mg/kg
900-176	CN46-000	2085444 40	750722 10	Copper	0	0	94 10	300	71100	71100	18 06	mg/kg
900-176	CN45-001	2085516 80	750398 20	Copper	0	0	95 90	300	71100	71100	18 06	mg/kg
900-165	CP46-003	2085879 70	750701 80	Copper	0	0.5	96 90	300	71100	71100	18 06	mg/kg
900-176	CN46-002	2085387 30	750607 80	Copper	0	0	98 80	300	71100	71100	18 06	mg/kg
900-176	CN45-000	2085455 00	750503 10	Copper	0	0	99 80	300	71100	71100	18 06	mg/kg
900-165	CO46-001	2085695 30	750660 20	Copper	0	0.5	103 00	300	71100	71100	18 06	mg/kg
900-176	CN44-000	2085457 40	750357 90	Copper	0	0	113 00	300	71100	71100	18 06	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Copper	0	0.5	125 00	300	71100	71100	18 06	mg/kg
000-101	CN47-001	2085375 30	750825 60	Copper	0	0	132 00	300	71100	71100	18 06	mg/kg
900-165	CP46-001	2085826 20	750589 90	Copper	0	0.5	138 00	300	71100	71100	18 06	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Vanadium	0	0.5	61 70	100	13400	13400	45 59	mg/kg
900-176	CN46-000	2085444 40	750722 10	Vanadium	0	0	70 80	100	13400	13400	45 59	mg/kg
900-165	CP46-003	2085879 70	750701 80	Vanadium	0	0.5	70 90	100	13400	13400	45 59	mg/kg

23

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CO46-000	2085633 50	750622 10	Vanadium	0	0.5	71 80	100	13400	13400	45 59	mg/kg
900-176	CM46-002	2085319 50	750699 70	Vanadium	0	0	73 10	100	13400	13400	45 59	mg/kg
900-176	CM46-002	2085319 50	750699 70	Vanadium	0	0	73 10	100	13400	13400	45 59	mg/kg
000-101	CN47-001	2085375 30	750825 60	Vanadium	0	0	86 20	100	13400	13400	45 59	mg/kg
900-165	CO46-001	2085695 30	750660 20	Vanadium	0	0.5	87 30	100	13400	13400	45 59	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Vanadium	0	0.5	89 00	100	13400	13400	45 59	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Vanadium	0	0.5	89 60	100	13400	13400	45 59	mg/kg
900-176	CN46 001	2085450 20	750649 50	Vanadium	0	0	95 20	100	13400	13400	45 59	mg/kg
900-165	CQ46 002	2085950 00	750598 30	Vanadium	0	0.5	105 00	100	13400	13400	45 59	mg/kg
900-165	CP46-000	2085821 50	750662 60	Vanadium	0	0.5	107 00	100	13400	13400	45 59	mg/kg
900-176	CN46-002	2085387 30	750607 80	Vanadium	0	0	108 00	100	13400	13400	45 59	mg/kg
900-176	CM45-001	2085330 10	750502 20	Vanadium	0	0	109 00	100	13400	13400	45 59	mg/kg
900-176	CN45 000	2085455 00	750503 10	Vanadium	0	0	109 00	100	13400	13400	45 59	mg/kg
900-176	CN45-001	2085516 80	750398 20	Vanadium	0	0	112 00	100	13400	13400	45 59	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Vanadium	0	0.5	126 00	100	13400	13400	45 59	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Vanadium	0	0.5	131 00	100	13400	13400	45 59	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Vanadium	0	0.5	132 00	100	13400	13400	45 59	mg/kg
900-176	CN44-000	2085457 40	750357 90	Vanadium	0	0	140 00	100	13400	13400	45 59	mg/kg
900-165	CP46-002	2085884 50	750630 40	Vanadium	0	0.5	141 00	100	13400	13400	45 59	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Vanadium	0	0.5	143 00	100	13400	13400	45 59	mg/kg
900-176	CM46-001	2085254 10	750748 30	Vanadium	0	0	158 00	100	13400	13400	45 59	mg/kg
900-165	CP46-001	2085826 20	750589 90	Vanadium	0	0.5	175 00	100	13400	13400	45 59	mg/kg
900-165	CQ45-000	2085951 20	750524 50	Zinc	0	0.5	79 20	50	576000	576000	73 76	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Zinc	0	0.5	80 40	50	576000	576000	73 76	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Zinc	0	0.5	86 40	50	576000	576000	73 76	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Zinc	0	0.5	88 60	50	576000	576000	73 76	mg/kg
900-176	CM46-002	2085319 50	750699 70	Zinc	0	0	89 60	50	576000	576000	73 76	mg/kg
900-176	CM46-002	2085319 50	750699 70	Zinc	0	0	89 60	50	576000	576000	73 76	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Zinc	0	0.5	96 60	50	576000	576000	73 76	mg/kg
900-165	CQ46-003	2086011 80	750563 80	Zinc	0	0.5	111 00	50	576000	576000	73 76	mg/kg
900-165	CP46-001	2085826 20	750589 90	Zinc	0	0.5	112 00	50	576000	576000	73 76	mg/kg

24

Characterization Data Summary IHSS Group 000-1

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-165	CQ46-004	2086008 20	750640 00	Zinc	0	0.5	115 00	50	576000	576000	73 76	mg/kg
900-165	CO46-000	2085633 50	750622 10	Zinc	0	0.5	116 00	50	576000	576000	73 76	mg/kg
900-176	CN46-002	2085387 30	750607 80	Zinc	0	0	120 00	50	576000	576000	73 76	mg/kg
900-176	CN46-001	2085450 20	750649 50	Zinc	0	0	128 00	50	576000	576000	73 76	mg/kg
000-101	CM48-008	2085305 10	751001 60	Zinc	0	0	161 00	50	576000	576000	73 76	mg/kg
900-165	CP46-003	2085879 70	750701 80	Zinc	0	0.5	201 00	50	576000	576000	73 76	mg/kg
900-176	CN44-000	2085457 40	750357 90	Zinc	0	0	210 00	50	576000	576000	73 76	mg/kg
900-176	CM45-001	2085330 10	750502 20	Zinc	0	0	214 00	50	576000	576000	73 76	mg/kg
900-165	CO46-001	2085695 30	750660 20	Zinc	0	0.5	216 00	50	576000	576000	73 76	mg/kg
900-176	CN45-000	2085455 00	750503 10	Zinc	0	0	292 00	50	576000	576000	73 76	mg/kg
900-176	CN45-001	2085516 80	750398 20	Zinc	0	0	304 00	50	576000	576000	73 76	mg/kg
900-176	CN46-000	2085444 40	750722 10	Zinc	0	0	332 00	50	576000	576000	73 76	mg/kg
900-176	CM46-001	2085254 10	750748 30	Zinc	0	0	3010 00	50	576000	576000	73 76	mg/kg
900-165	CP46-002	2085884 50	750630 40	Calcium	0	0.5	5480 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CM46-002	2085319 50	750699 70	Calcium	0	0	8030 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CN46-002	2085387 30	750607 80	Calcium	0	0	8660 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CN46-001	2085450 20	750649 50	Calcium	0	0	9410 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CQ46-005	2086003 60	750708 90	Calcium	0	0.5	9670 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CN45-000	2085455 00	750503 10	Calcium	0	0	10400 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CP46-000	2085821 50	750662 60	Calcium	0	0.5	10400 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CO46-000	2085633 50	750622 10	Calcium	0	0.5	10700 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CQ46-006	2086073 80	750599 60	Calcium	0	0.5	10800 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CM45-001	2085330 10	750502 20	Calcium	0	0	10900 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CQ46-002	2085950 00	750598 30	Calcium	0	0.5	11900 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CP46-003	2085879 70	750701 80	Calcium	0	0.5	12000 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CQ46-001	2085940 50	750668 40	Calcium	0	0.5	13600 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CN45-001	2085516 80	750398 20	Calcium	0	0	16600 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CN44-000	2085457 40	750357 90	Calcium	0	0	17400 00	3000	N/A	N/A	4467 00	mg/kg
000-101	CN48-000	2085369 50	750968 40	Calcium	0	0	17800 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CO46-001	2085695 30	750660 20	Calcium	0	0.5	19500 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CP46-001	2085826 20	750589 90	Calcium	0	0.5	20500 00	3000	N/A	N/A	4467 00	mg/kg

25

Characterization Data Summary IHSS Group 000-1

IHSS	Location	Easting	Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background +2SD	Unit
900-176	CN46-000	2085444 40	750722 10	Calcium	0	0	21100 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CQ46-000	2085945 10	750742 30	Calcium	0	0.5	26200 00	3000	N/A	N/A	4467 00	mg/kg
900-165	CQ46-004	2086008 20	750640 00	Calcium	0	0.5	28400 00	3000	N/A	N/A	4467 00	mg/kg
900 165	CQ45 000	2085951 20	750524 50	Calcium	0	0.5	33700 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CM46 001	2085254 10	750748 30	Calcium	0	0	84100 00	3000	N/A	N/A	4467 00	mg/kg
900 165	CQ46-003	2086011 80	750563 80	Calcium	0	0.5	87100 00	3000	N/A	N/A	4467 00	mg/kg
900-176	CM46-001	2085254 10	750748 30	Selenium	0	0	1 96	20	9610	9610	1 22	mg/kg
900 165	CO46 001	2085695 30	750660 20	Phenanthrene	0	0.5	1400 00	710	N/A	N/A	N/A	ug/kg

N/A = not applicable
SD = standard deviation

26

Table 4
IHSS Group 000-1 Summary of Analytical Results

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
4-Nitroaniline	37	0 00	2000 00	724 64	ug/kg	N/A	N/A	N/A
4-Nitrophenol	37	0 00	2000 00	838 11	ug/kg	15400000	15400000	N/A
Radium 226	23	100 00	4 20	1 32	pCi/g	N/A	N/A	N/A
Benzyl Alcohol	37	0 00	800 00	305 08	ug/kg	576000000	576000000	N/A
Plutonium-239/240	9	100 00	0 00	0 00	pCi/g	1429	252	0 07
P Bromodiphenyl Ether	37	0 00	395 00	160 08	ug/kg	N/A	N/A	N/A
2 4-Dimethylphenol	37	0 00	395 00	156 96	ug/kg	384000000	384000000	N/A
4-Methylphenol	37	0 00	395 00	160 39	ug/kg	96100000	96100000	N/A
4 Chloroaniline	37	0 00	800 00	358 92	ug/kg	76800000	76800000	N/A
Bis(2-Chloroisopropyl)Ether	23	0 00	26 00	23 76	ug/kg	64000000	64000000	N/A
Phenol	37	0 00	395 00	159 69	ug/kg	1000000000	1000000000	N/A
Pyridine	37	0 00	395 00	185 81	ug/kg	N/A	N/A	N/A
Bis(2-Chlorethyl)Ether	37	0 00	395 00	162 78	ug/kg	407000	4070	N/A
Bis(2-Chloroethoxy)Methane	37	0 00	395 00	174 01	ug/kg	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	37	16 22	75000 00	2251 39	ug/kg	320000000	320000	N/A
D1 N-Octylphthalate	37	0 00	395 00	159 04	ug/kg	10000000000	384000000	N/A
Hexachlorobenzene	37	0 00	395 00	162 12	ug/kg	280000	2800	N/A
2 4 6-Tribromophenol	24	95 83	3800 00	2987 50	ug/kg	N/A	N/A	N/A
Anthracene	37	5 41	290 00	102 66	ug/kg	576000000	576000000	N/A
1 2 4-Trichlorobenzene	37	0 00	395 00	153 53	ug/kg	192000000	192000000	N/A
2 4-Dichlorophenol	37	0 00	395 00	160 39	ug/kg	57600000	57600000	N/A
2 4 Dimethyltoluene	37	0 00	395 00	156 65	ug/kg	659000	6590	N/A
Pyrene	37	40 54	1600 00	257 55	ug/kg	576000000	576000000	N/A
Dimethyl Phthalate	37	0 00	395 00	155 99	ug/kg	10000000000	10000000000	N/A
Dibenzofuran	37	5 41	70 00	151 82	ug/kg	76800000	76800000	N/A
Potassium-40	23	100 00	24 00	16 91	pCi/g	N/A	N/A	N/A
Cesium 134	23	100 00	0 16	0 02	pCi/g	N/A	N/A	0 31

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
Polonium 210	23	100 00	5000 00	652 17	pCi/g	N/A	N/A	N/A
Thorium-230	23	100 00	30 00	1 30	pCi/g	N/A	N/A	N/A
Americium-241	23	100 00	4 50	0 62	pCi/g	215	38	0 02
Bismuth-214	23	100 00	0 87	0 64	pCi/g	N/A	N/A	N/A
Bismuth 212	23	100 00	1 90	0 70	pCi/g	N/A	N/A	N/A
Thallium-208	23	100 00	0 76	0 42	pCi/g	N/A	N/A	N/A
Thorium-231	23	100 00	4 70	0 68	pCi/g	N/A	N/A	N/A
Lead 214	23	100 00	0 89	0 61	pCi/g	N/A	N/A	N/A
Lead 212	23	100 00	2 00	1 17	pCi/g	N/A	N/A	N/A
Protactinium-234	23	100 00	0 00	0 00	pCi/g	N/A	N/A	N/A
Protactinium-234m	23	100 00	0 00	0 00	pCi/g	N/A	N/A	N/A
Uranium-235	23	100 00	0 32	0 14	pCi/g	135	24	0 09
Terphenyl-D14	24	95 83	2600 00	2020 83	ug/kg	N/A	N/A	N/A
Benzo(Gh)Perylene	37	18 92	490 00	162 09	ug/kg	N/A	N/A	N/A
Indeno(1 2 3-Cd)Pyrene	37	10 81	440 00	165 03	ug/kg	614000	6140	N/A
Benzo(B)Fluoranthene	37	27 03	580 00	171 80	ug/kg	614000	6140	N/A
Fluoranthene	37	37 84	1900 00	270 43	ug/kg	76800000	76800000	N/A
Benzo(K)Fluoranthene	37	24 32	750 00	184 12	ug/kg	614000	61400	N/A
Acenaphthylene	37	0 00	200 00	85 18	ug/kg	N/A	N/A	N/A
Chrysene	37	43 24	790 00	178 03	ug/kg	61400000	614000	N/A
2 Fluorobiphenyl	24	95 83	2300 00	1904 17	ug/kg	N/A	N/A	N/A
O-Fluorophenol	24	95 83	3700 00	2895 83	ug/kg	N/A	N/A	N/A
Bis(2-Chloroisopropyl)Ether	14	0 00	395 00	373 21	ug/kg	N/A	N/A	N/A
Nitrobenzene-D5	24	95 83	2600 00	2058 33	ug/kg	N/A	N/A	N/A
Phenol-D5	24	95 83	3700 00	2908 33	ug/kg	N/A	N/A	N/A
Benzo(A)Pyrene	37	35 14	750 00	174 50	ug/kg	61400	614	N/A
2 4-Dinitrophenol	37	0 00	2000 00	830 81	ug/kg	384000000	3840000	N/A
4 6-Dinitro-2-Methylphenol	37	0 00	2000 00	745 27	ug/kg	192000	192000	N/A
Dibenz(A H)Anthracene	37	0 00	395 00	162 46	ug/kg	61400	614	N/A
1,3 Dichlorobenzene	37	0 00	395 00	155 59	ug/kg	N/A	N/A	N/A

28

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
Benzol(A)Anthracene	37	43.24	750.00	171.39	ug/kg	614000	6140	N/A
4 Chloro-3-Methylphenol	37	0.00	800.00	294.18	ug/kg	N/A	N/A	N/A
2,6-Dinitrotoluene	37	0.00	395.00	164.18	ug/kg	659000	6590	N/A
N-Nitrosodi-N-Propylamine	37	0.00	395.00	165.91	ug/kg	64000	640	N/A
Benzoic Acid	37	0.00	2000.00	800.27	ug/kg	1000000000	1000000000	N/A
Hexachloroethane	37	0.00	395.00	163.47	ug/kg	125000000	320000	N/A
4-Chlorophenyl Phenyl Ether	37	0.00	395.00	157.64	ug/kg	N/A	N/A	N/A
Iron	29	100.00	41400.00	29534.48	mg/kg	576000	576000	18037.00
Lead	29	100.00	236.00	42.95	mg/kg	1000	1000	54.62
Manganese	29	100.00	701.00	471.52	mg/kg	83600	83600	365.08
Molybdenum	29	100.00	0.00	0.00	mg/kg	9610	9610	N/A
Nickel	29	100.00	62.30	39.19	mg/kg	38400	38400	14.91
Potassium	29	100.00	33000.00	22431.03	mg/kg	N/A	N/A	2967.20
Silver	29	100.00	0.00	0.00	mg/kg	9610	9610	N/A
Strontium	29	100.00	483.00	213.72	mg/kg	1000000	1000000	48.94
Tin	29	100.00	13.90	3.23	mg/kg	1000000	1000000	N/A
Actinium	23	100.00	2.10	1.21	pCi/g	N/A	N/A	N/A
Antimony	29	100.00	15.20	2.29	mg/kg	768	768	N/A
Arsenic	29	100.00	21.10	11.81	mg/kg	299	3	10.09
Barium	29	100.00	1050.00	734.86	mg/kg	133000	133000	141.26
Cadmium	29	100.00	41.40	4.58	mg/kg	1920	1920	1.61
Chromium	29	100.00	125.00	41.89	mg/kg	44300	4410	16.99
Cobalt	29	100.00	0.00	0.00	mg/kg	115000	115000	10.91
Copper	29	100.00	138.00	82.49	mg/kg	71100	71100	18.06
Vanadium	29	100.00	175.00	112.99	mg/kg	13400	13400	45.59
Zinc	29	100.00	3010.00	265.53	mg/kg	576000	576000	73.76
Calcium	29	100.00	115000.00	23939.66	mg/kg	N/A	N/A	4467.00
Uranium 238/234	23	100.00	4.90	2.58	pCi/g	N/A	N/A	N/A
Hexachlorocyclopentadiene	37	0.00	395.00	155.99	ug/kg	13300000	13300000	N/A
Selenium	29	100.00	1.96	0.15	mg/kg	9610	9610	1.22

Analyte	Total Number Samples Analyzed	Detection Frequency	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
Isophorone	37	0.00	395.00	156.96	ug/kg	1000000000	4720000	N/A
Acenaphthene	37	5.41	180.00	90.19	ug/kg	1150000000	115000000	N/A
Diethyl Phthalate	37	0.00	395.00	152.53	ug/kg	1000000000	1000000000	N/A
Di-N-Butyl Phthalate	37	0.00	395.00	162.46	ug/kg	N/A	N/A	N/A
Phenanthrene	37	40.54	1400.00	219.81	ug/kg	N/A	N/A	N/A
Butyl Benzylphthalate	37	5.41	360.00	172.07	ug/kg	3840000000	3840000000	N/A
N Nitrosodiphenylamine	37	0.00	395.00	154.62	ug/kg	3650000000	915000	N/A
Fluorene	37	5.41	140.00	156.88	ug/kg	768000000	768000000	N/A
Hexachlorobutadiene	37	0.00	395.00	154.28	ug/kg	5750000	57500	N/A
Pentachlorophenol	37	0.00	2000.00	725.96	ug/kg	149000000	37400	N/A
2,4,6 Trichlorophenol	37	0.00	395.00	155.27	ug/kg	1590000000	407000	N/A
2 Nitroaniline	37	0.00	2000.00	720.47	ug/kg	115000	115000	N/A
2 Nitrophenol	37	0.00	395.00	156.31	ug/kg	N/A	N/A	N/A
Naphthalene	37	0.00	395.00	155.59	ug/kg	768000000	768000000	N/A
2-Methylnaphthalene	37	0.00	395.00	153.19	ug/kg	768000000	768000000	N/A
2-Chloronaphthalene	37	0.00	395.00	155.27	ug/kg	1540000000	1540000000	N/A
3,3 Dichlorobenzidine	37	0.00	800.00	369.59	ug/kg	996000	9960	N/A
2-Methylphenol	37	0.00	395.00	171.47	ug/kg	961000000	961000000	N/A
2 Chlorophenol	37	0.00	395.00	159.36	ug/kg	961000000	961000000	N/A
2,4,5 Trichlorophenol	37	0.00	395.00	156.96	ug/kg	1920000000	1920000000	N/A
Nitrobenzene	37	0.00	395.00	166.59	ug/kg	961000	961000	N/A
3 Nitroaniline	37	0.00	2000.00	729.11	ug/kg	N/A	N/A	N/A
Aroclor 1016	1	0.00	34	34	ug/kg	2240.00	224000.00	N/A
Aroclor 1221	1	0.00	34	34	ug/kg	2240.00	224000.00	N/A
Aroclor 1232	1	0.00	34	34	ug/kg	2240.00	224000.00	N/A
Aroclor 1242	1	0.00	34	34	ug/kg	2240.00	224000.00	N/A
Aroclor 1248	1	0.00	34	34	ug/kg	2240.00	224000.00	N/A
Aroclor 1254	1	100.00	66	66	ug/kg	2240.00	224000.00	N/A
Aroclor 1260	1	100.00	78	78	ug/kg	2240.00	224000.00	N/A

SD = standard deviation
N/A = not applicable

3.0 DEVIATIONS FROM PLANNED SAMPLING SPECIFICATIONS

Deviations from the planned sampling specifications described in IASAP Addendum #IA-03-02 (DOE 2002a) are presented in the following table

Table 5
IHSS Group 000-1 Deviations from Planned Sampling Specifications

Location Code	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Comments
CM47-003	2085314 67	750929 01	2085375 3	750825 6	Sample location deviations resulted from the location of roll-off bins or auger refusal
CO46-000	2085633 51	750622 07	2085945 1	750742 3	
CM46-002	2085319 43	750713 68	2085319 5	750699 7	
CM45-001	2085330 14	750497 15	2085330 1	750502 2	

4.0 DATA QUALITY ASSESSMENT

The Data Quality Objectives (DQOs) for this project, as defined in the IASAP (DOE 2001), were achieved based on the Data Quality Assessment (DQA) provided in the following sections. The DQO/DQA process ensures that the type, quantity, and quality of environmental data used in decision making are defensible, with emphasis on attaining adequate (statistical) confidence in the decisions. The DQO/DQA process is based on the following guidance and requirements:

- EPA QA/G-4, 1994a, Guidance for the Data Quality Objective Process,
- EPA QA/G-9, 1998, Guidance for the Data Quality Assessment Process, Practical Methods for Data Analysis, and
- DOE Order 414 1A, 1999, Quality Assurance

Verification and validation (V&V) of the data are the primary components of the DQA. The final data are compared with original project DQOs and evaluated with respect to project decisions, uncertainty within the decisions, and quality criteria required for the data, specifically precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS). Validation criteria are consistent with the following RFETS-specific documents and industry guidelines:

- EPA 540/R-94/012, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,
- EPA 540/R-94/013, 1994c, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, and
- Kaiser-Hill Company, L L C (K-H) V&V Guidelines
 - General Guidelines for Data Verification and Validation, DA-GR01-v1, 1997a
 - V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v1, 1998
 - V&V Guidelines for Volatile Organics, DA-SS01-v1, 1997b
 - V&V Guidelines for Semivolatile Organics, DA-SS02-v1, 1997c
 - V&V Guidelines for Metals, DA-SS05-v1, 1997d
- Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5

DQO Decisions

Consistent with original DQO decision rules of the project, a sum-of-ratios (SOR) calculation was performed on each sample acquired from the latest evolution of samples from IHSS Group 000-1. Several nonradiological samples exceeded an SOR of 1 in the surface soil relative to RFCA Tier II ALs. These elevated results are primarily due to

32

arsenic (IHSSs 900-165 and 900-176), PCBs (IHSS 900-176), and benzo(a)pyrene (IHSS 900-165) The SOR did not exceed 1 relative to RFCA Tier I AL

Use of the applicable sample power calculation (EPA QA/G-4), lognormal methods, or nonparametric, such as the Sign Test in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (EPA, et al , 1997) would yield better than a 95% confidence that enough samples were acquired to conclude that each analyte is below its respective RFCA Tier I AL

Verification and Validation of Results

Verification ensures that data produced and used by the project are documented and traceable in accordance with quality requirements Validation consists of a technical review of all data that directly support the project decisions so that any limitations of the data relative to project goals are delineated and the associated data are qualified accordingly The V&V process defines the criteria that constitute data quality, namely PARCCS parameters Data traceability and archival are also addressed V&V criteria include the following

- Chain-of-custody,
- Preservation and hold-times,
- Instrument calibrations,
- Preparation blanks,
- Interference check samples (metals),
- Matrix spikes/matrix spike duplicates (MS/MSD),
- Laboratory control samples (LCS),
- Field duplicate measurements,
- Chemical yield (radiochemistry),
- Required quantitation limits/minimum detectable activities (sensitivity of chemical and radiochemical measurements, respectively), and
- Sample analysis and preparation methods

Evaluation of V&V criteria ensures that PARCCS parameters are satisfactory (i.e., within tolerances acceptable to the project) Satisfactory V&V of laboratory quality controls are captured through application of validation "flags" or qualifiers to individual records Validation results are summarized in the "Completeness" subsection

Field sampling was conducted according to the approved IASAP, including related SOPs and addenda Raw hardcopy data (e.g., individual analytical data packages) are currently filed by RIN and are maintained by Kaiser-Hill Analytical Services Division (K-H ASD), older hardcopies may reside in the Federal Center in Lakewood, Colorado Electronic data are stored in the RFETS Soil and Water Database (SWD)

Precision and Accuracy

Precision and accuracy of laboratory results are adequate based on validation frequencies and results, which are tabulated in the "Completeness" section (see exceptions related to gamma spectroscopy and XRF metals)

33

Sampling precision is indeterminate as no field duplicate samples were acquired
Frequency of duplicate collection was less than the DQO of $\geq 5\%$

Field blanks collected during the project indicate no false positives in the data set due to cross-contamination

Representativeness

Samples acquired for the project are representative based on the types, number, and location of samples acquired relative to the site-specific history Other criteria that corroborate representativeness include

- Implementation of industry-standard chain-of-custody protocols,
- Compliance with sample preservation and hold times, and
- Compliance with documented and site-approved sampling plans and procedures, including SW-846 analytical methods

Completeness

Sampling completeness was evaluated through an inventory of the number and types of samples acquired for IHSS Group 000-1 Specifically, to determine if enough samples were collected and if valid results were produced to make project decisions The following number of surface soil samples were evaluated relative to the analytical suites metals (24), radionuclides (24), SVOCs (24), and PCBs (2)

Beryllium and lithium are not included in the metals suite in subsurface soils (SW6200, XRF) Radionuclides were determined through gamma spectroscopy, where Plutonium-239/240 and Uranium-233/234 are inferred from Americium-241 and Uranium-238, respectively

Satisfactory V&V are indicated by a 10% (or greater) validation frequency of all results by method, and $<10\%$ rejection of those records validated Table 6 indicates that validation and rejection frequencies were acceptable for all listed analytical suites except gamma spectroscopy and metals (by XRF) Validation of gamma spectroscopy and metals records is in progress

Comparability

All results presented are comparable with nation-wide CERCLA data and DOE complex-wide environmental data This comparability is based on

- 1 Use of standardized engineering units in the reporting of measurement results,
- 2 Consistent sensitivities of measurements (generally $\leq \frac{1}{2}$ corresponding action levels), and,
- 3 Use of site-approved procedures, work plans, and quality controls (e g , Contractual Statements of Work for lab analyses)

Table 6

IHSS Group 000-1 Summary of Validated Records

Validation Qualifier Code	Total Number of Samples	PCBs SW-846 8082	SVOCs SW-846 8270
Null	-	-	-
I	166	6	160
J1	1	-	1
V1	1074	21	1053
Total	1241	27	1214
Percent Validated	87%	78%	87%
Percent Rejected	0%	0%	0%

Null, I, N, Y, Z = not validated

V = valid without qualification

J = estimated (semi-quantitative) value

Sensitivity

Reporting limits (RLs) in units of ug/kg (parts per billion or ppb) for organics, mg/kg (parts per million or ppm) for metals, and pCi/g for radionuclides were compared with RFCA Tier I and Tier II ALs on a record-by-record basis. The number of samples is given with respect to each analyte and sample type. "Adequate" sensitivity is defined as an RL less than the analyte's associated action level, ideally <1/2 the AL. Adequate sensitivities of analytical methods were attained for all results except for the following analytes and number of samples: arsenic (24), benzo(a)pyrene (1), and dibenz(a,h)anthracene (1).

Summary

Data quality is acceptable for project decisions based on the V&V criteria cited and with the qualifications given. Validation frequency needs to be completed for metals and gamma spectroscopy. Metals analysis should be complemented with additional arsenic and beryllium results, as necessary, for comparison with applicable ALs.

35

5.0 REFERENCES

- DOE, 1992-2001, Historical Release Reports for the Rocky Flats Plant, Rocky Flats Plant, Golden, Colorado, June
- DOE, 1999, Order 414 1A, Quality Assurance
- DOE, 2000, Rocky Flats Cleanup Agreement (RFCA), Attachment 5, March
- DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June
- DOE, 2002a, Industrial Area Sampling and Analysis Plan Addendum #IA-03-02, Rocky Flats Environmental Technology Site, Golden, Colorado, November
- DOE, 2002b, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January
- EPA QA/G-4, 1994a, Guidance for the Data Quality Objective Process
- EPA 540/R-94/012, 1994b, USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review
- EPA 540/R-94/013, 1994c, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review
- EPA QA/G-9, 1998, Guidance for the Data Quality Assessment Process, Practical Methods for Data Analysis
- Kaiser-Hill (K-H), 1997a, General Guidelines for Data Verification and Validation, DA-GR01-v1, December
- K-H, 1997b, V&V Guidelines for Volatile Organics, DA-SS01-v1, December
- K-H, 1997c, V&V Guidelines for Semivolatile Organics, DA-SS02-v1, December
- K-H, 1997d, V&V Guidelines for Metals, DA-SS05-v1, December
- K-H, 1998, V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v1, February
- Lockheed-Martin, 1997, Evaluation of Radiochemical Data Usability, ES/ER/MS-5

ENCLOSURE

IHSS GROUP 000-1 RAW DATA

page 60 JA-H-001206

